

**IN THE SPECIFICATION**

Please amend the specification as follows:

After the section heading “Related Applications”, please insert the following new paragraph [0001]:

[0001] This application is a division of co-pending U.S. Patent Application Serial No. 10/039,284 entitled “High Voltage Power MOSFET Having A Voltage Sustaining Region That Includes Doped Columns Formed By Trench Etching Using An Etchant Gas That Is Also A Doping Source” filed December 31, 2001.

Please amend original paragraphs [0001], [0002], [0003], [0004], [0009], [0011] as follows:

~~[0001]~~ [0002] This application is related to ~~co~~pending U.S. Patent Application Serial No. 09/970,972 entitled “Method for Fabricating a Power Semiconductor Device Having a Floating Island Voltage Sustaining Layer,” filed in the United States Patent and Trademark Office on October 4, 2001, now U.S. Patent 6,465,304.

~~[0002]~~ [0003] This application is related to ~~co~~pending U.S. Patent Application Serial No. \_\_\_\_\_ [GS 157] 10/039,068, entitled “Method For Fabricating A High Voltage Power MOSFET Having A Voltage Sustaining Region That Includes Doped Columns Formed By Rapid Diffusion,” filed in the United States Patent and Trademark Office on December 31, 2001, now U.S. Patent 6,566,201.

~~[0003]~~ [0004] This application is related to ~~co~~pending U.S. Patent Application Serial No. \_\_\_\_\_ [GS 156] 10/038,845, entitled “High Voltage MOSFET Having A Voltage Sustaining Region That Includes Doped Columns Formed By Trench Etching And Ion Implantation,” filed in the United States Patent and Trademark Office on December 31, 2001, now U.S. Patent 6,656,797.

~~{0004}~~ **[0005]** This application is related to ~~co~~pending U.S. Patent Application Serial No. ~~[GS 175]~~ 10/039,241, entitled "High Voltage MOSFET Having A Voltage Sustaining Region That Includes Doped Columns Formed By Trench Etching And Diffusion From Regions of Oppositely Doped Polysilicon" filed in the United States Patent and Trademark Office on December 31, 2001, now U.S. Patent 6,576,516.

~~{0009}~~ **[0010]** FIG. 3 shows a MOSFET that is designed to operate at higher voltages with a reduced on-resistance. This MOSFET is disclosed in paper No. 26.2 in the Proceedings of the IEDM, 1998, p. 683. This MOSFET is similar to the conventional MOSFET shown in FIG. 2 1 except that it includes p-type doped regions 40 and 42 which extend from beneath the body regions 5 and 6 into the drift region of the device. The p-type doped regions 40 and 42 define columns in the drift region that are separated by n-type doped columns, which are defined by the portions of the epitaxial layer 1 adjacent the p-doped regions 40 and 42. The alternating columns of opposite doping type cause the reverse voltage to be built up not only in the vertical direction, as in a conventional MOSFET, but in the horizontal direction as well. As a result, this device can achieve the same reverse voltage as in the conventional device with a reduced layer thickness of epitaxial layer 1 and with increased doping concentration in the drift zone. Curve 25 in FIG. 2 shows the on-resistance per unit area as a function of the breakdown voltage of the MOSFET shown in FIG 3. Clearly, at higher operating voltages, the on-resistance of this device is substantially reduced relative to the device shown in FIG. 1, essentially increasing linearly with the breakdown voltage.

~~{0011}~~ **[0012]** The structure shown in FIG. 3 can be fabricated with a process sequence that includes multiple epitaxial deposition steps, each followed by the introduction of the appropriate dopant. Unfortunately, epitaxial deposition steps are expensive to perform and thus this structure is expensive to manufacture. Another technique for fabricating these devices is shown in ~~co~~pending U.S. Appl. Serial No. 09/970,972 U.S. Patent 6,465,304, in which a trench is successively etched to different depths. A dopant material is implanted and diffused through the bottom of the trench after each etching step to form a series of doped regions (so-called "floating islands") that collectively function like the p-type doped regions 40 and 42 seen in FIG. 3.

However, the on-resistance of a device that uses the floating island technique is not as low as an identical device that uses continuous columns.